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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/176,580	10/21/98	SUNDARAM R	501.12-0460

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EXAMINER

VERBITSKY, G

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 01/19/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/176,580**

Applicant(s)  
**Sundaram et al.**

Examiner  
**Gail Verbitsky**

Group Art Unit  
**2859**



☒ Responsive to communication(s) filed on August 15 and September 18, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 2-16 and 18-22 is/are pending in the applicat

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 2-16 and 18-22 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### **DETAILED ACTION**

1. In light of arguments by applicant, as stated in Appeal Brief, the finality of the previous Office action is hereby withdrawn pursuant to 37 CFR 1.129(a) and the prosecution is reopened. Applicant's submission after final filed on August 15 and September 18, 2000 has been entered.

#### ***Claim Objections***

2. Claim 10 is objected to because of the following informalities: Perhaps applicant should replace "slider" in line 2 with -- slider body of the glide head-- in order to maintain consistency through the claim. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2-4, 11, 14, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Boutaghou et al.'184 [hereinafter Boutaghou].

Boutaghou discloses in Figs. 1-4 a thermal asperity sensor comprising a slider body 12, transducers (magnetoresistive sensors) 18 spaced apart on rails (contours) of an air bearing surface 14 (col. 6, lines 6-7), a control circuitry for moving a head and lifting it above a disc

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surface (col. 1, lines 27-30). The transducers 18 are coupled to a peak circuitry 25 detecting a voltage spike indicative of a “thermal asperity” on a disc through bond pads (physical contact) or terminals (conductive strips) on a surface of the slider body 12 (col. 3, lines 56-58) and being capable to detect PZT excitation or other signals (col. 3, lines 43-45), rails 26 where transducers 18 are deposited. MR are fabricated by known technique from NiFe (col. 3, line 23) by deposition of very thin as known in the art (col. 4, lines 8-9), thus, constituting a very thin flat (planar) (col. 7, line 20) asperity contacting surface oriented along the ABS. Boutaghou also states that during the fabrication process, portions of rails act as substrates 28 upon which sensor layers 18 are deposited (col. 3, lines 56-58). Since the rails are formed on the ABS (Fig. 2), inherently, it is expected that the ABS be configured prior to the deposition process. As shown in Fig. 1, the plane of the transducers is oriented along the ABS (not the trailing edge). Boutaghou states (col. 3, line 16) that PZT asperity sensors are also being used.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-6, 8-10, 13, 16, 18-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou et al. ‘184 [hereinafter Boutaghou].

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Boutaghou discloses in Figs. 1-4 a thermal asperity sensor comprising a slider body 12, transducers (magnetoresistive sensors) 18 spaced apart on rails (contours) of an air bearing surface 14 (col. 6, lines 6-7), a control circuitry for moving a head and lifting it above a disc surface (col. 1, lines 27-30). The transducers 18 are coupled to a peak circuitry 25 detecting a voltage spike indicative of a "thermal asperity" on a disc through bond pads (physical contact) or terminals (conductive strips) on a surface of the slider body 12 (col. 3, lines 56-58) and being capable to detect PZT excitation or other signals (col. 3, lines 43-45), rails 26 where transducers 18 are deposited. MR are fabricated by known technique from NiFe (col. 3, line 23) by deposition of very thin as known in the art (col. 4, lines 8-9), thus, constituting a very thin flat (planar) (col. 7, line 20) asperity contacting surface oriented along the ABS. Boutaghou also states that during the fabrication process, portions of rails act as substrates 28 upon which sensor layers 18 are deposited (col. 3, lines 56-58). Since the rails are formed on the ABS (Fig. 2), inherently, it is expected that the ABS be configured prior to the deposition process. As shown in Fig. 1, the plane of the transducers is oriented along the ABS (not the trailing edge).

Boutaghou does not explicitly disclose conductive pads extending to the top of the glider, as stated in claim 6, pads in physical contact with the transducer, as stated in claim 8, and other limitations of claims 3-5 and 9-15.

Official Notice is taken with respect to a particular location of the conductive pads: as stated in claim 6: the particular location of the conductive pads, i.e., between the bottom and the top of the slider, absent any criticality, is only considered to be the "optimum" or "preferred"

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location that a person having ordinary skill in the art at the time the invention was made, would have found obvious to determine using routine experimentation based, among other things, on the location of the peak circuitry and the size of the device.

Official Notice is taken with respect to claims 9-10: since particular size and location of the transducer absent any criticality, is only considered to be obvious modification of the size of the transducer and its location on the slider disclosed by Boutaghou.

Official Notice is taken with respect to claim 13: since positioning of the conductive strips on the plateau on the air bearing surface absent any criticality, is only considered to be "the optimum" or "preferred" location that a person having ordinary skill in the art would have found obvious to determine using routine experimentation based, among other things, on the size of the device, required accuracy and location of the peak circuitry.

Official Notice is taken with respect to claim 16 and 18: since the deposition of the thermal transducer onto the ABS before or after the glide head is sliced from a wafer, absent any criticality, is only considered to be the "optimum" or "preferred" sequence that a person having ordinary skill in the art at the time the invention was made would have been found obvious to provide using routine experimentation based, among other things on what type of a manufacturing process is being used.

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7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou as applied to claims 2-6, 8-11, 13-16, 18-19 and 21 above, and further in view of Kennedy et al. [hereinafter Kennedy].

Boutaghou discloses the device as stated above in paragraphs 4 and 6.

Boutaghou does not disclose the limitations of claim 7.

Kennedy discloses a device in the field of applicant's endeavor wherein a PZT 70 connected to a signal processing unit 19 with a pair of electrical leads 17 and layers of gold conducting material (pads) to provide connections between the PZT and leads (col. 6, lines 66-67 and col. 7, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add leads to the in the device disclosed by Boutaghou, as taught by Kennedy, in order to communicate the signal from the transducer to a signal processing unit, as already suggested by Kennedy and very well known in the art.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou as applied to claims 2-6, 8-11, 13-16, 18-19 and 21 above, and further in view of Flechsig et al. [hereinafter Flechsig].

Boutaghou discloses a device as stated above in paragraphs 4 and 6.

Boutaghou does not explicitly disclose grounding of the thermal transducers.

Flechsig discloses in Fig. 9 a port 120 to which a sensor 91 is grounded.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically ground transducers disclosed by Boutaghou to a ground port in order to stabilize or limit the voltage to ground, as very well known in the art.

With respect to a common electrical ground as stated in claim 12: since it is very well known in the art to electrically ground transducers in the same circuitry or device to the same (common) electrical ground conductor in order to minimize number of lines having "0" potential in the same circuitry and noise-to-signal ratio.

9. Claims 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou '184 as applied to claims 2-6, 8-11, 18-19 and 21 in view of Nguyen et al. [hereinafter Nguyen].

Boutaghou discloses the device as stated above in paragraphs 4 and 6.

Boutaghou does not explicitly disclose the limitations of claims 20 and 22.

Nguyen discloses a device comprising a thin film transducer 28 mounted on a rail 24 mounted on an ABS 23 or 24 (col. 2, lines 36-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the MR sensors in the device disclosed by Boutaghou of a thin film, as taught by Nguyen, because it is very well known in the art to make MR sensor using a thin film technology.



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10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

***Conclusion***


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 disclose related devices and methods.

12. Any inquiry concerning this communication should be directed to the examiner Verbitsky whose telephone number is (703) 306-5473.

Any inquiry related to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

GKV

December 20, 2000

  
**G. BRADLEY BENNETT**  
**PRIMARY EXAMINER**  
AV 2859